Utah Department of Transportation

Specification Writers' Guide

June 5, 2006

State of Utah
Department of Transportation

Specification Writers' Guide

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Chapter 1 - Overview

This guide provides instructions for specification writers contributing to the state of Utah's *2005 Standard Specifications for Road and Bridge Construction*, supplemental specifications, and special provisions. The information included here constitutes the Department's approved guidelines for matters of writing style, word and number usage, and formatting.

Disclaimer

The examples and directions set forth in this guide are the desired goal of the Department. Currently approved standard specifications, supplemental specifications, and special provisions may not be in compliance with the Guide. The Standards and Specifications Section will be reviewing all standards for compliance and will update files only as part of another required change or as part of the next major version. Files will not be updated solely on the basis of guidance set forth in the guide.

For questions not addressed here consult *The Chicago Manual of Style*, the *United States Government Printing Office Style Manual*, any specialized sources cited within, or a recent standard dictionary of American English. The Web links to these two manuals can be found from the Standards and Specifications Section's Reference Web page under Specification Writer's Guide References at http://www.udot.utah.gov/index.php/m=c/tid=719.

All examples cited in this Guide are simply models for style, usage, and formatting. Do not consider them to be, or use them as, actual specifications or portions thereof.

Purpose of the Revision

The Department revises its Standard Specifications periodically, having done so most recently in 2005. The first purpose of such a revision is to consolidate into a single volume selected special provisions and supplemental specifications that have been written or revised since publication of the last edition.

A second goal of the new revision was to improve clarity. This was accomplished in part through the use of writing that promotes consistency, clearly, and identifies the roles and responsibilities of all the parties involved in a contract.

Benefits of the Active Voice and Imperative Mood

Among the writing tools best suited to bringing such enhanced clarity to Standard Specifications is an increased use of both the active voice and the imperative mood.

These grammatical terms will be explained fully in later sections of this Guide. Active voice forces a writer to identify within a sentence who is responsible for what. A sentence in the passive voice that might have said (as it did in earlier editions and in many current submittals and special provisions):

> *If invoices for transportation charges are not furnished, payment will be delayed until the invoices are submitted*

In the active voice might say:

> *The Department will withhold payment for transportation charges until the contractor submits the invoices.*

Not only does the second sentence have 18 percent fewer words than the first but it also adds two pieces of information: who is responsible for the delay in payment (the Department) and who is responsible for submitting the invoices (the contractor). Used well, the active voice adds clarity, fixes responsibility, and improves readability by simplifying sentence structures and eliminating words.

The imperative mood offers similar benefits. It is the most efficient way to give a command, direction, or instruction. The imperative allows brevity because the person to whom the instruction is addressed is understood grammatically to be included in the sentence but is left out of the wording. Because the imperative mood provides efficient direction, it is often found in cookbooks, where it is understood but unstated that the instructions in the book are directed to the cook:

> *Heat the pan. Add some oil. Crack two eggs. Flip once. Make some coffee. Enjoy your breakfast.*

Unless otherwise indicated, such statements in Standard Specifications are directed to the bidder or the contractor. Increased use of the imperative gives specification writers a tool to make this direction more efficient.

Chapter 2 - Organization of Specifications

Hierarchy of Organization

Use the following hierarchy when writing the elements of a specification, whether a standard, a supplemental, or a special provision. Use the least number of subparagraphs needed. The layout of each specification is as follows:

SECTION NUMBER
TITLE
PART (One, Two, and Three)
ARTICLE (For example, 1.1, 1.2, 2.1, 2.2, 3.1, and 3.2)
Paragraph (For example A, B, C under an article)

Example:

PART 1	GENERAL				
1.1	ARTICLE				(First level)
	A.	Paragraph			(Second level)
		1.	Subpargraph		(Third level)
			a.	Subparagraph	(Fourth level)
				1) Subparagraph	(Fifth level)

Basic Elements

Divisions:

Division 1 - General Requirements
Division 2 - Site Construction
Division 3 - Concrete
Division 4 - Masonry (Not used by UDOT at this time)
Division 5 - Metals
Division 6 - Wood and Plastics
Division 7 - Thermal and Moisture Protection
Division 8 - Doors and Windows (Not used by UDOT at this time)
Division 9 - Finishes
Division 10 - Specialties (Not used by UDOT at this time)
Division 11 - Equipment (Not used by UDOT at this time)
Division 12 - Furnishings (Not used by UDOT at this time)
Division 13 - Special Construction
Division 14 - Conveying Systems (Not used by UDOT at this time)
Division 15 - Mechanical (Not used by UDOT at this time)
Division 16 - Electrical

Sections:

PART 1 GENERAL

PART 2 PRODUCTS

PART 3 EXECUTION

If a part is not used within a section use the following as an example of the correct usage.

PART 2 PRODUCTS Not used

PART 3 EXECUTION Not used

Format

Standard Specification:

Section number: Centered, Times Roman, font size 12, bold, using Header 1, upper case.

Title: Centered, Times Roman, font size 16, bold, using Header 2, upper case.

Part: Times Roman, font size 12, bold, using Header 3, upper case.

Article: Times Roman, font size 12, bold, using Header 4, upper case.

Example: See Appendix 1 for specification layout.

Supplemental Specification:

(New section added, current standard completely replaced, or current standard deleted):

Type (two lines): Centered, Times Roman, font size 12, bold, initial caps.

Section number: Centered, Times Roman, font size 12, bold, using Header 1, upper case.

Title: Centered, Times Roman, font size 16, bold, using Header 2, upper case.

Instructions: Times Roman, font size 12, bold. These instructions indicate whether the section is being added, deleted and replaced, or deleted.

Part: Times Roman, font size 12, bold, using Header 3, upper case.

Article: Times Roman, font size 12, bold, using Header 4, upper case.

Example: See Appendix 2 for specification layout.

(Partial section added, modified, or deleted):

Type (two lines): Centered, Times Roman, font size 12, bold, initial caps.

Section number (followed by an "M"): Centered, Times Roman, font size 12, bold, using Header 1, upper case. No space between the section number and the "M." (Example: 02056M)

Title: Centered, Times Roman, font size 16, bold, using Header 2, upper case.

Instructions: Times Roman, font size 12, bold. These instructions indicate which part of the section is being added, deleted, or modified.

The following are used, as needed depending on the extent of the modification. Do not use heading levels for the following areas within this type of specification. Several examples are given to illustrate the typical formatting. Formatting may vary depending on the extent of the modification.

Part: Times Roman, font size 12, bold, upper case.

Article: Times Roman, font size 12, bold, upper case.

Example: See Appendix 3 for specification layout.

Special Provisions

Formatting similar to both types of supplemental specifications except as follows:

Type: Centered, Times Roman, font size 12, bold, upper case.

Project Number: Centered, Times Roman, font size 12, bold, upper case.

Section number (followed by an "M" or "S"): Centered, Times Roman, font size 12, bold, using Header 1, upper case.

Remainder of formatting is similar to supplemental specifications. Pay close attention to the "Instructions" formatting for both types of Supplemental Specifications. When writing an "S" Special Provision that replaces a current Standard the title of the Special Provision section must match exactly the title of the Standard being replaced.

Example: See Appendix 4 for specification layout.

Date (Standard, Supplemental, or Special Provision):

Standard and Supplemental - In footer, positioned at line 3, right justified.

Special Provision - On line above "SPECIAL PROVISION" type text, right justified.

Example: See Appendices for specification layout.

Headers and Footers:

Headers: Not used in standard specifications, supplemental specifications, or special provisions

Footer: Centered, Times Roman, font size 12, with page numbering set, use automatic code for the page number and a hard page number for the total number of document pages.

Example: See Appendices for specification layout.

Other Examples and Files:

The Standards and Specifications Web site for master files provides additional information for use in creating standard specifications, supplemental specifications, and special provisions. Refer to the Specification Writers' Guide reference at http://www.udot.utah.gov/index.php/m=c/tid=719.

Tab Sets:

Set all tabs to half-inch increments unless other increments are required for a specific reason.

Chapter 3 - Abbreviations, Acronyms, and Symbols

Definitions

Abbreviations, acronyms, and symbols are shortened forms of longer words, names, or expressions. Each differs from the others in formation and usage.

> Abbreviations in the strictest sense are shortened forms of a single word or phrase, usually followed by a period and often including lower case letters.
>
> **Examples:** Dr., etc., and chap. With the exception of a.m., p.m., and No. (for number), do not use abbreviations.
>
> Acronyms are formed from the first letters of a string of words or an organizational name. The letters in acronyms can be read or pronounced separately or together as a single word. Do not use periods in an acronym.
>
> **Examples:** PVC, IEEE, FHWA, WYDOT, and OSHA.
>
> Symbols are freestanding signs, letters, or characters with unique agreed-on meanings. Symbols are not abbreviations and are not punctuated or treated as such. Use a space before and after a symbol. Symbols are not preceded by a hyphen or followed by a period.
>
> **Examples:** lb (for pound), ft (foot or feet), yd^3 (cubic yard).

Rules for Acronyms and Abbreviations

Be consistent. The shortened forms used most often in UDOT Standard Specifications are listed in Section 00570, Definitions. Additional forms are listed in this Guide. For the proper form of abbreviations not listed in these sources, consult chapter 14, "Abbreviations," of *The Chicago Manual* or chapters 9 and 10, "Abbreviations and Letter Symbols" and "Signs and Symbols," in the *United States Government Printing Office Style Manual*. Do not invent or use forms that vary from these sources. Refer to http://www.udot.utah.gov/index.php/m=c/tid=719.

Before introducing a shortened form not listed in Section 00570, Definitions, write out the complete name or meaning at the first usage, followed immediately with the shortened form in parentheses. When introducing a word-string of common nouns and adjectives set in lower-case letters that will later be used in a shortened form, maintain the lower-case letters in the full words and type the short form in capital letters.

Example: When horizontal elliptical reinforced concrete pipe (HERCP) is specified . . . Install the HERCP so that . . .

Do not introduce a shortened form that will not be reused in the same named and numbered section of Standard Specifications. When a previously introduced short form is reused in a new named and numbered section, write out the complete name or meaning at the first usage in the new section, then follow with the short form in parentheses.

The list of acronyms shown below in Table 3-1 was accurate at the time the 2005 Standard Specifications were printed. Writers who plan on frequent use of an acronym or other shortened form not in the table should contact the Standards and Specifications Section to suggest its inclusion. The Standards and Specifications Section will provide guidance on how to proceed with the recommend change to Section 00570.

Use the indefinite article "an" before acronyms and abbreviations that are pronounced as if they begin with a vowel. If the acronym or abbreviation begins as if it were pronounced with a consonant precede it with an "a."

Examples: An AASHTO requirement, an SAE specification (because the letter s is pronounced es), a PSC document.

Form plural acronyms by adding the lowercase letter "s." Do not use an apostrophe.

Examples: Multiple disadvantaged business enterprise are written DBEs, not DBE's, and multiple variable message signs are VMSs, not VMS's.

Table 3-1
Acronyms and Abbreviations Used in Standard Specifications

Acronym or Short Form	Full Name or Meaning
AAN	American Association of Nurserymen
AAR	Association of American Railroads
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AGC	Associated General Contractors
AI	Asphalt Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AMRL	AASHTO Materials Reference Laboratory
ANSI	American National Standards Institute
APL	Accepted Products Listing
ARA	American Railway Association
AREA	American Railway Engineering Association
ASCE	American Society of Civil Engineers
ASLA	American Society of Landscape Architects
ASTM	American Society for Testing and Materials
ATMS	Advanced Traffic Management System
AWPA	American Wood Preservers' Association

AWWA	American Water Works Association
AWS	American Welding Society
CRF	Code of Federal Regulations
CSI	Construction Specification Institute
EBS	UDOT's Electronic Bid System
EUSERC	Electric Utility Service Equipment Requirements Committee
FHWA	Federal Highway Administration
FSS	Federal Specifications and Standards
GSA	General Services Administration
IMSA	International Municipal Signal Association
ITE	Institute of Traffic Engineers
MIL	Military Specifications
MUTCD	Manual on Uniform Traffic Control Devices
NEMA	National Electrical Manufacturers Association
NVLAP	National Verification Laboratory Acceptance Program, (Bureau of Standards)
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
PDPL	Performance Data Products Listing
SAE	Society of Automotive Engineers
SSPC	Structural Steel Painting Council
WP3	Storm Water Pollution Prevention Plan
U.L.	Underwriter's Laboratory
UDOT	Utah Department of Transportation
UPDES	Utah Pollution Discharge Elimination System
USAS	United States of American Standard Institute
WWPA	Western Wood Products Association

Style for Use of Measurement and Payment in Standard Specifications

Measurement and Payment is a separate document created using UDOT supplied macros and templates. Refer to http://www.udot.utah.gov/index.php/m=c/tid=719 for the link to information and files relating to Measurement and Payment.

Style for Measurements in Standard Specifications

Measurements involve descriptions of quantities and are composed of a numeric value and a unit of measure. Use numbers for the numeric value of a measurement; use symbols to indicate the unit of measure. Do not use words or abbreviations for the number or units in a measurement Exceptions are discussed in Chapter 4 of this Guide.

Measurement Symbols

Table 3-2
Measurement Symbols for Standard Specifications

Inch-Pound Units (U.S. Customary System)		Kind of quantity or measurement
Symbol	Unit Name	
Mil	mil (0.001 inch)	**Length**
inch*	inch	
Ft	foot	
Yd	yard	
Mi	mile	
in^2	square inch	**Area**
ft^2	square foot	
yd^2	square yard	
mi^2	square mile	
Acre	acre	
fl oz	fluid ounce	**Volume**
Pt	pint	
Qt	quart	
Gal	gallon	
in^3	cubic inch	
ft^3	cubic foot	
yd^3	cubic yard	
Oz	ounce	**Mass (Weight)**
Lb	pound	
Ton	ton, short (2000 lb)	
degrees F**	degree Fahrenheit	**Temperature**
S	second	**Time**
Min	minute	
H	hour	
D	day	
Mph	miles per hour	**Speed**
Psi	pounds per square inch	**Pressure**
W	watt	**Power, Energy, and Electrical**
kW	kilowatt	
A	ampere	
V	volt	
VA	voltampere	
Ω	ohm	
Hz	hertz	
J	joule	

Lm Fc Hp	lumen footcandle horsepower	
lbf kip	pound-force 1000 pounds-force	**Force**
KU	Krebs unit	**Viscosity, Dynamic**
cSt St	centistokes stokes	**Viscosity, Kinematic**
gpm	gallons per minute	**Flow**

* For the unit, inch, always spell out, do not abbreviate in

** For degrees F or degrees of angle, spell out degrees, do not use the degree symbol, except in tables (See Table 3.3)

Symbols for units of U.S. Standard Units (Inch-Pound Units) appear in paragraph 9.62, "Standard Letter Symbols for Units of Measure," the *United States Government Printing Office Style Manual*. Refer to http://www.udot.utah.gov/index.php/m=c/tid=719.

To use measurement symbols properly:

1. Do not follow with a period unless dictated by placement at the end of a sentence. Measurement symbols are not abbreviations.

2. Do not add an s to form a plural. The symbol remains the same whether the quantity is one or many.

   Examples: 1 lb, 2 lb (not 2 lbs); 1 ft, 2 ft; 24 h (not 24 hrs).

3. Type a space between the quantity and the symbol. Examples: 2 lb, 2 ft, 25 degrees F.

4. Precede only with numbers, never words. Example: 2 ft; not two ft.

5. Do not use symbols without accompanying numerals.

   Example: Measurement is by the cubic yard; not the yd^3.

6. Do not mix symbols and names in the same expression.

   Example: ft/s or feet per second; not feet/second or feet/s.

7. Print symbols and quantities in normal, upright type regardless of surrounding text.

   Example: 2 ft, *not 2 ft*.

8. Do not use unit abbreviations, short forms, or symbolic representations not shown in Table 3-2.

   Examples: 2 ft, not 2'; 6 inches, not 6".

Mathematical and Other Symbols

Table 3-3
Mathematical and Other Symbols

Symbol	Meaning	Use symbol in …	
		Tables only	Text and tables
+	Plus		Y
-	Minus		Y
±	plus or minus		Y
=	equal to		Y
<	less than		Y
≤	less than or equal to		Y
>	greater than		Y
≥	greater than or equal to		Y
×	multiplied by; dimensional indicator		Y
/	Per		Y
%	Percent	Y	
º	degree (as a unit of angular measurement)	Y	
Ω	ohm		Y
:	ratio; proportionality		Y
$	U.S. dollar		Y
•	bullet		Y

When using mathematical and other signs and symbols:

1. Type a space before and after.

   Example: 2 in × 2 in × 1 in.

   Exceptions: no space precedes the angular degree symbol (180º) and no space follows the minus sign when used in a temperature that is below zero degrees (-5 degrees F or -5 °F).

2. In text, use words for those quantitative relationships indicated in Table 3-3.

   Example: Fasten reinforcing bars securely except where the spacing is *less than* 1 ft.

Chapter 4 - Numbers vs. Words

General

Use numbers for measurements, sizes, and critical or precise quantities.

> **Examples:** Maintain a surface temperature of 70 degrees F for 72 hours; gouges not more than ¼ inch deep; mark the weight on members heavier than 3 ton.

Use numbers when cross-referencing sections, subsections, and other parts of Standard Specifications or similar sources.

> **Example:** Use materials required by AASHTO section 5 or Refer to this Section, article 2.1, Materials, paragraph A2, Check Dams, Stone.

Use numbers for numerical values greater than ten.

> **Examples:** Fabricate from not more than two pieces of sheet steel. Furnish six sets of drawings. Allow two days to complete the testing. Make payment within 30 days of completion.

Use words for numbers at the beginning of a sentence. If a number appears at the beginning of a sentence, reorder the sentence if possible.

> **Example:** Thirty minutes before installation, begin preparing the material. Or: Prepare the material 30 minutes before installation.

When quantity and size are expressed together, use numbers for the size and words for the quantity.

> **Examples:** three ½-inch holes; twenty-two 50-pound weights.

Be consistent. Within the same context, treat similarly all numbers that refer to the same category of things.

> **Examples:** Test from 5 to 15 seconds not test from five to 15 seconds. Thirty minutes before starting, and again sixty (not 60) minutes later check the temperature.

Decimals

Express decimals in numbers, not words.

> **Example:** 0.1, not one-tenth.

Never leave a decimal point without numerals on both sides.

> **Examples:** 1.5, 6.125, 0.5, 0.125.

Time and Date

Use numbers for clock times. Keep zeros when describing times "on the hour." Use the standard 12-hour system, with all numbers accompanied by the appropriate a.m. or p.m. designation (using lower-case letters, followed by periods); leave a space between the number and abbreviation but no spaces inside the abbreviation.

> **Examples:** 9:00 a.m., 10:30 p.m.
>
> **Exception:** Use the words "noon" and "midnight" to indicate twelve o'clock. Do not use the number 12 followed by a word or abbreviation. Example: Do not work from noon to midnight. (Not 12 noon or 12 p.m.; not 12 midnight or 12 a.m.)

Use words (written in full) for the names of months and numbers for days of the month and years. Do not use ordinal designators (e.g., th and rd) in dates.

> **Examples:** June 15, 2005 or from May 1, to September 30.

Money

Use numbers for monetary amounts. Do not include the decimal and zeros for the cents when amounts are in whole dollars. Do not leave a space between the dollar sign ($) and numeric value.

> **Example:** Bill at the rate of $1,500 per mix.

Fractions

Determine whether it is technically correct to use fractions or decimals. In most cases, use fractions when expressing inch-pound measures and sizes.

> **Examples:** Leave the cut end at least ½ inch above the base; drill to a depth of ¼ inch.
>
> **However:** Construct from aluminum alloy sheet at least 0.0051 inches thick.

Use numbers for mixed fractions; do not leave a space between the whole number and simple fraction.

> **Examples:** Join the top to the bottom with an arc of not more than 87½ degrees; leave a distance of no more than 1¾ times the diameter of the bolt.

Use fractions when forming a unit-modifier or compound adjective. Follow the fraction with a hyphen, and use the full unit name.

> **Examples:** a 1½-inch pipe; a ¼-mile open space.

Use the AutoCorrect feature in MS Word to enter common fractions. To do this click Autocorrect Options from the Tools Menu, then from the "AutoFormat" and "AutoFormat As You Type" tabs check the Fraction option.

Fractions other than those that are already set in Word can be created by first entering the fraction, 1/16 for example. Continue by highlighting the numerator, clicking "Font" from the Format Menu, and then selecting superscript. Next highlight the denominator and then continue as in the numerator, except choose "Subscript" from the options.

Use words for simple fractions that do not describe a measurement or a precise quantity, that stand alone, or that come before the words "of a" or "of an." Use a hyphen to connect the numerator and denominator.

> **Examples:** Add mulch when the tank is at least one-third full of water. Use a spray bar three-fourths the length of the mixer or greater. Use straw, hay, or sawdust to fill the lower one-fourth to one-third of the trench.

Percent

Use the word "percent" in text and precede with a number.

> **Examples:** If the average density is less than 95 percent, but no one sample is less than 92 percent, divide the samples into two, five-sample lots. Changes greater than 5 percent will … A minimum of 4 percent moisture … Provided the quantity does not exceed 0.1 percent of the total contract cost, or $2,500, whichever is greater (not one-tenth of one percent). Use the % symbol in tables.

Hyphens and Unit Modifiers

When a number and word (usually a unit name) work together to describe something else (usually an object or material, like a pipe, bolt, or board), they are acting as a single word, or adjective, called a unit modifier.

Use a hyphen between the number and word in unit modifiers. Do not use hyphens with unit symbols.

> **Examples:** Flame- or saw-cut two, 4½-foot long test samples of any size 400-grade bar.
> Install a 400-watt, 120-volt, bar-type electric heating unit in all controller cabinets.
> Construct the cabinet from 0.125-inch thick aluminum.

Commas vs. Spaces

Use commas in numbers of four digits or more.

> **Examples:** $1,000; $10,000; 1,000 ft; 2,500 psi; 10,000 psi; 1,000 gal.

Use a combination of letters and numbers for very large round numbers.

> **Examples:** Our budget exceeds $16 million.

Chapter 5 - Punctuation

Serial Commas

In a series of three or more elements, separate the elements with a comma. Use a comma before the conjunction ("and" or "or") joining the last two elements.

Examples:

Provide a minimum of eight individually selectable outputs, each selectable by time-of-day, day-of-week, and week-of-year.

Do not use mortar blocks, bricks, wood, or aluminum framework in supporting deck slab reinforcement.

Protect trees, shrubs, and other landscape features designated by the Engineer for preservation from abuse, marring, or damage during construction.

With Closing Quotation Marks

Place periods and commas required by a sentence inside closing quotation marks, regardless of whether the period or comma is part of the quoted matter.

Examples:

Correct method: Lay the downstream end of each blanket on top, creating a "shingle effect."

Incorrect method: Lay the downstream end of each blanket on top, creating a "shingle effect".

The contact pressure is "the average ground contact pressure," expressed in pounds per square inch.

Quotation Marks When Referencing Signs and Labels

When referring to specific words that appear elsewhere on signs, labels, drawings, etc., use quotation marks. Do not use all-capitals, bold typefaces, or similar typographic features for added emphasis.

Examples:

Mark each drawing "final."

Mark submittals "approved," "approved as corrected," or "not approved."

Mark the pull box covers "UDOT Traffic Signal" when the box contains traffic signal conductors.

Letters as Shapes

Do not use quotes around the letter. Link the letter and following word with a hyphen if warranted.

Examples:

U-shaped staples	Y-connector
an A-frame structure	U-bolts
I-connector	an S curve
O-ring	H-pile

To make letters used as shapes plural, add an "s" and no apostrophe.

Example: Vs, not V's.

Parentheses

Use parentheses to insert and set off additional information relevant to the sentence. Do not use dashes for this purpose in Standard Specifications (because of the possibility of confusion with the minus sign or similar marks or symbols).

Example: Nut rotation is relative to the bolt regardless of the element (nut or bolt) that is turned.

Parentheses are also used to insert and set off counterparts or equivalencies, such as chemical formulas.

Example: Conform to the requirement for chrome oxide (Cr_2O_3) green.

Place commas, semicolons, periods, or other punctuation that the main sentence might need after the closing parenthesis mark.

Chapter 6 - Capitalization

General

Aim for consistency, especially within specifications. For situations not addressed in this Guide, consult chapter 7, "Names and Terms," of *The Chicago Manual of Style* or chapter 3, "Capitalization Rules," in the *United States Government Printing Office Style Manual*. Refer to http://www.udot.utah.gov/index.php/m=c/tid=719.

Avoid over-capitalization. Excessive capitalization slows reading and reduces the very emphasis capitalization is meant to achieve.

Specific

Capitalize the following words or categories of specific names and things:

ACRONYMS

Document titles

Examples:

the Engineer's Weekly Report
Certificate of Compliance

Laws and legislative acts

Examples:

the Utah Seed Law
the Federal Seed Act
Clean Air Act
Utah Statute 11-14-101

Official titles

Example:

the State Bridge Engineer
the Engineer
the Contractor

Program (when referring to specific programs within UDOT)

Examples:

Construction Program
Highway Development Program
Materials Program
Traffic Program

Proper nouns

Titles of sections, subsections, tables, and figures in Standard Specifications;

Examples:

A bid guarantee that is not submitted in accordance with this Section, article 1.10, Proposal Guarantees.

Sign and deliver the guaranty to the Engineer before acceptance of the Contract in accordance with Section 00570.

Refer to this Section, article 1.6, Contract Bonds.

Do not capitalize:

bidder
commission (when referring to the Utah Transportation Commission)
fabricator
plans
subcontractor
work (even when referring to the defined term)

Chapter 7 - Lists

General

Lists may be used at any level within a specification.

See examples below under punctuation.

Punctuation

UDOT does not use punctuation in lists of specifications, references, or general items.

Example 1:

1.2 RELATED SECTIONS

A. Section 01455: Material Quality Requirements

B. Section 01741: Final Cleanup

C. Section 02332: Embankment for Bridge

D. Section 02912: Topsoil

Example 2:

1.3 REFERENCES

A. AASHTO M 145: Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes

B. AASHTO T 27: Sieve Analysis of Fine and Coarse Aggregates

Example 3:

B. Use a rangeland type drill for non-turf areas or a Brillion type drill for turf areas equipped with the following:
   1. Depth band
   2. Seed box agitator
   3. Seed metering device
   4. Furrow opener
   5. Packer wheels or drag chains

Use a period at the end of a numbered list in which the list items are complete sentences.

Example:

D. Prepare Turf Sod Surface:
   1. Review finish grade to confirm that topsoil is 1-1/2 inch blow the top of all walks, curbs, mow strips and other hard surfaces.
   2. Apply fertilizer at the rate of 2 lbs/100 yd^2 and mix thoroughly into upper 2 inches of topsoil.
   3. Level and roll seeded areas using a 21 gallon water-filled hand roller containing 8 gallons to 10 gallons of water.
   4. Just before laying the sod, lightly rake and dampen with water the top 1/8 to 5/8 inches of soil.

Use a period at the end of a numbered list items when the list includes long items that contain a complete sentence. When this applies to one item in the list, end all items in the list with a period.

Example:

B. Concrete:
   1. Refer to Section 03055.
   2. Furnish the Engineer with mix design, trial batch gradation, and 28-day compressive strength test results from the trial batches before placing concrete.
   3. Use the same materials and admixtures intended for production in the trial batches.
   4. The proportioning and mixing of the trial batches are subject to inspection.
   5. Do not place pavement before obtaining written approval of the mix design.
   6. Meet the approved trial batch proportions. Changes in the mix proportions require new trial batches.

End the items in a numbered list with a period when the listed items contain a bolded introductory element, usually followed by a colon.

Example:

A. **Seasonal:** Do not pave from October 15 to April 15. Submit cold weather concrete plan to the Engineer for written approval to pave outside these limits.

B. **Hot Weather and Cold Weather:** Refer to Section 03055.

C. **Night Operations:** Provide proper lighting from one-half hour after sunset to one-half hour before sunrise following Section 00555.

Structure

Use parallel structure when creating lists by beginning each item in a list with the same part of speech–noun, verb, adjective, etc.

Example: Each numbered item begins with a verb:

A. Place the mixed material with a self-propelled asphalt paver.

B. Adjust emulsion content as pavement conditions change. Repair reclaimed materials when surface ruts or ravels before placement of final wearing surface.

C. Use watering device to prevent materials from adhering to the tires for breakdown or intermediate rolling.

D. Add water to milled material as necessary to facilitate uniform mixing.

E. Continue breakdown rolling until no displacement is noted.

F. Use steel wheel rollers in static or vibratory mode as required for final rolling.

G. Wait 72 hours after a rain or confirm that moisture content is less than 1.5 percent before placing flush, tack, or final surfacing on cold recycled material.

Example: Each numbered item begins with a preposition:

A. During suspensions, at no additional cost to the Department, store materials and equipment:
   1. Outside the clear zone.
   2. As far from the travel way as possible.
   3. At a location that will not cause maintenance or safety problems for the roadway.

Chapter 8 - Tables, Figures, and Forms

General

Keep tables and figures as simple as possible, both in layout and content. Display information so it can be grasped quickly and without confusion. For additional guidance on the format and design of tables, consult chapter 12, "Tables," of *The Chicago Manual of Style* and chapter 13, "Tabular Work," in the *United States Government Printing Office Style Manual*. Refer to http://www.udot.utah.gov/index.php/m=c/tid=719.

Tables

Number all tables, with the number itself preceded by the word "Table." Begin renumbering with each new section.

Where appropriate, give every table a title; capitalize the first letter only of all significant words. Do not place a period at the end.

Center table number, and title horizontally on the page. Place the table number and title each on their own line, and set both in bold-faced, 12-point Times New Roman type. Set the table number above the title.

Use either 10- or 12-point Times New Roman type for table text. Bold column headers.

Use grid lines on tables for all cells unless doing so would confuse the user. Use a normal single weight line for all lines.

Examples:

Table 2

Price Reductions for Deficient Thickness over Existing Surfaces	
Deviations Below Profile (in feet)	**Pay Factor**
0.0 to 0.02	1.00
0.02 to 0.04	.90
0.04 to 0.06	.60

Table 6

Physical Properties of Joint Sealer (Structures) and Test Methods		
Modulus of Elasticity at 100 percent Elongation	132 psi	ASTM D 412
Hardness (Shore A)	40 ± 5	
Elongation (at break)	700 percent	ASTM D 412
Recovery	Greater than 90 percent	
Tensile Strength	190 psi	ASTM D 412
Adhesive in Peel	20 lbs/inch	TT-S00230 C Type II, Class A
Service Range	-40 degree F to 150 degree F	TT-S-00230 C
Initial Cure, Tack Free (Depending on Temperature and Humidity)	6 to 8 hours	
Final Cure	5 to 8 days	
Staining Characteristics	Nonstaining	
Color	Gray	

In text, refer to tables by number.

Examples: See Table 1. Refer to Table 2.

Forms

Show the full form title when referring to a specific form. Place quotation marks around the title of the form followed by the word "form." Include the appropriate form number in parentheses as applicable.

The word "Form" and the number may be used alone only upon additional reference within the same section as the initial full form title and form number.

Example:

Complete and submit the "Pile and Driving Equipment Data" form located at the end of this Section.

Complete the "Inspector's Daily Report" form (C111) as required.

Complete Form C111 as required. (This example applies when used in the same section as the above example.

Chapter 9 - Wording of Specifications

General

Use the simplest language that says clearly and accurately what needs to be said. Write as if you were speaking or giving directions aloud. Avoid jargon, contorted wording, and pseudo-legalisms. Use terms with legal meanings only on advice from counsel.

Active Voice

Voice is a property of verbs that indicates whether the subject of the sentence acts or is acted upon–either active or passive. In the active voice, the subject is the doer of the act, and the verb makes clear within the sentence who is doing what. The active voice leaves no doubt who is responsible for the action described. When feasible, keep sentences as simple as possible by using one-word verbs.

Example:

The Department specifies the dimensions.

The Department did the deed, and the verb "specifies" says in one word what the Department did. Occasionally the verb in the active voice requires a helping verb to complete the action or intention.

Example:

The Engineer may test for consistency of individual loads.

In this case, using the one-word verb "tests" would not completely convey the intended meaning of the sentence. "May" here indicates that it is at the Engineer's discretion if the loads will be tested. Remember, this sentence is still in the active voice because the doer of the action is conducting the action and appears in the sentence.

In contrast, sentences in the passive voice need not say anything about the doer of the action. Responsibility does not have be to assigned. In addition, verbs in the passive voice always need help, and even at their simplest, they always must be accompanied by a form of the verb to be (which includes is, was, will be, shall be, etc.).

Example:

The concrete was placed.

The contractor may have placed the concrete, but we do not know because the sentence does not say. The passive verb must be helped by was. These are the traits of a sentence in the passive voice: the verb is packaged in a phrase with a form of to be, and the doer of the action does not

have to be identified. (If the doer is identified, the identification comes after the verb in a phrase that begins with by. For example: The concrete was placed by the contractor.) The active and passive voice each have their uses. The active voice is best used when it is important to identify the party responsible for the action in a sentence.

Example:

Weigh masters will determine tonnage.

The passive voice is used when the receiver is more important than the actor. Passive sentences can be used when you do not know or do not want to mention the actor.

Examples:

Tonnage will be determined.
The failure occurred because metal shavings were dropped into the gear housing.

As a general rule for writing Standard Specifications, and except as noted elsewhere in this Guide, use the active voice rather than the passive.

Imperative Mood

Mood is a property of verbs that conveys the writer's or speaker's belief about the truth or nature of the sentence—whether it is meant to be a command, a fact, or conjecture. There are three verb moods in English: imperative, indicative, and subjunctive.

The imperative mood is used to give a command or instruction. A distinctive feature of statements in the imperative mood is that they leave out the subject of the sentence—that is, the subject is understood but never stated.

In writing specifications within UDOT, whether a standard specification, supplemental specification, or special provision, specifications are written to the Contractor. The Specifications define the Contractor's responsibility in meeting each specification, spell out the Department's expectations, and explain what the Contractor is expected to provide. Unless otherwise noted, all actions are to be performed by the Contractor.

Example:

Order the concrete.

This sentence is **written in both the active voice and the imperative mood**. Because the Standard Specifications already makes clear who the direction is addressed to, the party responsible for carrying out the directive—the Contractor—does not need to be stated. The complete sentence is understood to be:

[Contractor,] order the concrete.

The second type of verb mood is the indicative mood, which is used to indicate statements of fact and description. The indicative mood is used frequently in the Standard Specifications. In the following example, the statement is intended as a simple description of what is or is meant to be, and the verb will establish it in the indicative. (Because most verbs have voice and mood at the same time, the sentence is in both the indicative mood and the active voice.)

Example:

The Engineer will establish right-of-way and construction lines.

The final mood type is the subjunctive mood. Because it is used to convey doubt or conjecture or to pose a "what if" situation, the subjunctive mood is rarely used in the Standard Specifications.

Example:

If slotted or oversized holes are specified, the Contractor will use hardened flat washers.

Voice and Mood in Standard Specifications

When giving instructions to the Contractor, use the active voice and imperative mood.

Examples:

Furnish and install high strength fasteners for structural connections.
Meet the requirements of Section 02746.
Give two copies of the completed form to the Engineer.
When using mineral filler, provide an additional bin.

To provide information, use the indicative mood. In most situations, use the combination of active voice and indicative mood.

Examples:

The state retains ownership of salvaged materials.
The Department will not accept computer printouts for design calculations.

Measurement and Payment

Refer to UDOT Standards and Specifications web area at http://www.udot.utah.gov/index.php?m=c&tid=302 for instructions and files related to measurement and payment.

Chapter 10 - Other Wording and Usage

General

Choose the wording that says most clearly and efficiently what needs to be said. Say no more than that, but say exactly that.

Needless Words and Jargon

Many words serve only as filler. Their use adds clutter and can hinder a reader's ability to grasp what is important. Omit words that do not add meaning. Favor a single word over a phrase. Avoid jargon.

Alternatives to Common Wordy Phrases

Instead of …	Use or Consider …
a minimum of	at least
absolutely essential	essential
ambient, atmospheric	Air
as may be necessary	as necessary
at a later date	Later
commence	Begin (or start)
cost thereof	cost of
dispose of at a contractor-furnished site	becomes the Contractor's property
enclosed herewith	enclosed
fails to	does not
give due and sufficient written notice	give written notice
impracticable	Impractical
in order to	To
in lieu of	instead of
in the event of	If
in advance of	before
job site	project
practicable	practical
prior to	before
through the use of	By
until such time as	Until
utilize	Use
worksite	project

Words and Phrases Not to Use

Many of the words or phrases in the following list add no meaning, add confusion, or introduce passages that are unnecessary because the same information is covered elsewhere in Standard Specifications, usually in CSI Master Format Division 01, General Requirements.

Do Not Use
"as shown on the plans" or similar wording
"as approved by the Engineer" or similar wording
"at the contractor's expense"
"care shall be taken"
"conformance"
"contract item"
"in the plans"
"in the specifications"
"neither … nor"
"permit" when used to mean "allow"
"pertinent"
"special attention of the contractor"
"subsidiary"
"the attention of the contractor is directed to …"

Usage of Specific Words or Phrases

And/Or – This construction is awkward and confusing. Write "red, blue, or both" not "red and/or blue." "Fabrication includes other inserts, sleeves, or both"; not "Fabrication includes other inserts and/or sleeves."

Appropriate – Use instead of "pertinent" for stating or attaching relevant information. Example: "Include material thicknesses and other appropriate data needed for fabrication."

As specified in – Use instead of "as described in," "as designated in," "as indicated in," "pursuant to," or similar phrases that reference provisions of a specification.

At no additional cost to the Department – Use instead of "at the contractor's expense."

Conform, Conforming, and Conformance – Use "accordance" or "in accordance with" instead of "conformance." Example: "Provide magnesium sulfate in accordance with AASHTO T 104." The word "to" always follows "conform"; "conforming" is followed by "to" or "with."

Ensure vs. Insure vs. Assure – These are three different verbs with three different meanings. Use "insure" only when speaking of the sort of financial protection offered by insurance companies. "Assure" is only used when giving reassurance to another person, as in "Let me assure you that . . ." UDOT does not use "ensure" or "assure" in specification writing.

In the contract – Use instead of "in the specifications" or "on the plans."

Incidental – Use instead of "subsidiary." Example: "Finishing local material source sites, including seeding and mulching, is not measured or paid for separately and is considered incidental to other items of work."

May – Use as appropriate instead of "exercise its option to," "reserve the right to," or similar phrases that describe a party's prerogatives.

Shall – The use of the imperative mood eliminates the need for "shall." Use "will" to indicate something the Department will execute.

Quantity vs. Amount – Use "quantity" for materials. Use "amount" for money.

That vs. Which. "That" and "which" are often used as if they are interchangeable. They are not. "That" is properly used to introduce information or a phrase that is essential to the meaning of a sentence. "Which" introduces information that is not essential to the meaning of a sentence. If, without changing the meaning of the sentence, a comma can be placed before the word you want to use ("that" or "which") the right word is "which." If a comma will change the meaning, the right word is "that."

Hyphenation, Word Separation, and Standard Phrasing

English changes over time and words that are commonly used together tend to migrate, first staying paired but separate, then finding frequent use with a linking hyphen, then joining eventually into a single word.

It can be hard to know where in this progression a word pair or phrase may be. Some common combinations are shown below in the form used in Standard Specifications. For further guidance, consult table 6.1, "Spelling Guide for Compound Words and Words with Prefixes and Suffixes," in *The Chicago Manual of Style* or chapters 6 and 7, "Compounding Rules" and "Compounding Examples," in the *United States Government Printing Office Style Manual*. Refer to http://www.udot.utah.gov/index.php/m=c/tid=719.

Hyphenated Words, Compound Words, Word Separation, and Standard Phrasing for use in Standard Specifications

Instead of …	**Use …**
&	and
air entraining	air-entraining
attaining	obtaining
center line	centerline
cross section	cross-section
earth moving or earthmoving	earth-moving
edge line	edgeline
guard rail	guardrail
high-early-strength	high early strength
pre-construction	preconstruction
right of way	right-of-way
steel wheel	steel-wheel
straight edge (the tool)	straightedge
sub-base	subbase
water reducing	water-reducing
work force	workforce

Cross-References

Refer to sections or articles of Standard Specifications by number. UDOT does not refer to sections by number and title except in the "Related Sections" article. Capitalize the word "Section" when making such a reference.

Examples:

Use Pozzolans conforming to Section 03055 and specification ASTM C 618.

Use water reducers or plasticizers per Section 03055.

UDOT does not refer to a specific article or paragraph in a cross-reference to another section, only within the same section.

Examples:

Refer to this Section, article 1.6, Contract Bonds. (Use this type of cross-reference because it refers to the section in question.)

Refer to Section 00515, article 1.6, Contract Bonds. (Do not use this type of cross-reference because it refers to another section.) The correct cross-reference is: Refer to Section 00515.

Chapter 11 - Specification Writer's Checklist

Use this checklist to verify that the many common problems in specification writing are addressed and corrected as well as to verify the accuracy of the general content of each specification. Chapter numbers pertaining to the specific portions of this Guide are provided in parentheses when appropriate.

_____ Check accuracy of content.

_____ Determine that the text is complete and presented in a logical order. Make sure no portions of text were inadvertently dropped in preparation of the document.

_____ Check for proper date and document format (Chapter 2). For project specific Special Provisions, if using a previously used copy, update the date so it is current for the project. Do not change the date of a Department Special Provision unless the content of that particular Special Provision is modified. Modification of a Department Special Provision is authorized for a project but notification must be given to the owner of that section, i.e., the Materials Engineer. This notification allows the Department to update Department Special Provisions so that repeated changes on future projects are minimized. Refer to the "Instructions" area under both types of Supplemental Specifications (Chapter 2) and in the examples (Appendix 2 and 3) for text to add between the Section Title and Part 1 for Supplemental Specifications and Special Provision.

_____ DO NOT modify an approved Supplemental Specification in any manner if that Supplemental Specification is being put in a project. This includes changing the date, adding a project number, or removing the text "Supplemental Specification" from the top of the specification. Change Supplemental Specification ONLY if the intension is to submit the change to the Standards Committee through the coordination process.

_____ Check that the title of an "S" Special Provision that replaces a Standard matches the Standard. A Special Provision can not change the title of a Standard. If a new title is required a new Section number must be selected in accordance with currently established procedures.

_____ Check that the proper "M" or "S" designation for a Special Provision is used when numbering a section and in cross-references.

_____ Check that the "END OF SECTION" text is used properly. Do not use on "M" Supplemental Specifications or "M" Special Provisions (Appendices).

_____ Check that all reference citations are exactly correct. Verify references to numbers and titles of sections, subsections, forms, and figures from Standard Specifications are correct and are correctly capitalized and punctuated (Chapters 2 and 6).

- [ ] Check that notes are accurate and are numbered correctly in the text.

- [ ] Check that all Parts, Articles, and Paragraphs are formatted properly (Chapter 2).

- [ ] Check that all Related Sections and Reference articles are cross-referenced properly with the body of the specification (Chapter 10 and Appendix 1).

- [ ] When creating a modification using an "M" Supplemental Specification or "M" Special Provision check all Related Section and Reference changes. Check that the Related Sections and Reference articles are still cross-referenced properly within the body of the specification if a Related Section or Reference is removed or added by the modification. If not, add or remove the appropriate article in the modification (Chapter 10 and Appendix 1).

- [ ] Check that the footer is formatted correctly (Chapter 2).

- [ ] Use accurate and current abbreviations and acronyms when appropriate (Chapter 3). Spell out acronyms when first used.

- [ ] Use correct symbols for measurement (Chapter 3).

- [ ] Use correct symbols for bid and pay units (Chapter 3).

- [ ] Use correct mathematical signs and symbols (Chapter 3).

- [ ] Check proper use of periods. Do not use a period after a symbol, except at the end of a sentence (Chapter 3).

- [ ] Punctuate lists consistently (Chapter 5).

- [ ] Avoid overcapitalization (Chapter 6). For example use "Engineer" and "Contractor" not "ENGINEER" and "CONTRACTOR."

- [ ] Format tables consistently. Check that all tables have titles and are numbered correctly and that all entries in tables are correct and located in proper rows and columns, under correct headings, and placed in the correct position in the text (Chapter 8).

- [ ] Check text descriptions of tables against information in the tables.

- [ ] Check that equations and formulas are complete and accurate and placed in the correct position in the text.

- [ ] Phrase sentences in the active voice by stating the action and imperative mood by giving direction or instruction to the contractor (Chapter 9).

- [ ] Avoid unnecessary words and jargon (Chapter 10).
- [ ] Use italicized font for non-UDOT published documents.
- [ ] Use MS Word's spell check feature to check for spelling errors.
- [ ] Double-check accuracy of content.
- [ ] Proofread the document. Have another person do this as well. Carefully proofread all electronic changes because you may either leave in a word from the older version or take out too many words.
- [ ] Consider whether the Special Provision you wrote may become a Standard and contact the Standards and Specifications group if it will or you think it might.
- [ ] Complete any other review of your document that you thing will make it a better specification from a technical and formatting standpoint.

Appendices

1 Format for Standard Specifications.

2 Supplemental Specification (New section added, current standard completely replaced, or current standard deleted).

3 Supplemental Specification (Partial section added, modified, or deleted).

4 Special Provisions (All types).

Appendix 1: Format for Standard Specifications

SECTION 00000

TITLE HERE

PART 1 GENERAL

1.1 SECTION INCLUDES

A.

B.

1.2 RELATED SECTIONS

A. Section 00000: Title here

B. Repeat for each specification referenced in the body of this section

1.3 REFERENCES

A. AASHTO M 288: Geotextile Specification for Highway Applications

B. ASTM A 252: Welded and Seamless Steel Pipe Piles

C. Repeat for each item referenced in the body of this section

D. List all AASHTO references first, followed by ASTM references, and finally by all others as applicable. List each document or reference only once even if a document is listed several times in the body of the section, each referring to a different chapter or section.

1.4 **TITLE** (Continue as needed)

PART 2 PRODUCTS

2.1 TITLE AS APPLICABLE

A.

B.

2.2 TITLE AS APPLICABLE (Continue as needed)

A.

B.

PART 3 EXECUTION

3.1 TITLE AS APPLICABLE

A.

B.

3.2 TITLE AS APPLICABLE (Continue as needed)

A.

B.

END OF SECTION

The following is the footer information for a standard specification.

Title
00000 - Page x of y

Date goes here

Appendix 2: Supplemental Specification (New section added, current standard completely replaced, or current standard deleted).

Supplemental Specification
2005 Standard Specification Book

SECTION 00000

TITLE HERE

NOTE: Enter instructions on what actions to take with respect to this Supplemental Specification. Three examples follow:

Delete Section 00000 and replace with the following:

Or

Add Section 00000

Or

Delete Section 00000 in its entirety. (For this type no other text follows this line.)

PART 1 GENERAL

1.1 SECTION INCLUDES

Refer to Appendix 1 for additional formatting.

The following is the footer information for this type of supplemental specification.

Title
00000 - Page x of y

Date goes here

Appendix 3: Supplemental Specification (Partial section added, modified, or deleted)

This example is not all inclusive, but gives a general idea of the format.

Supplemental Specification
2005 Standard Specification Book

SECTION 00000M

TITLE HERE

NOTE: Enter instructions on what actions to take with respect to this Supplemental Specification. Each set of instructions are independent of each other. Four examples follow:

Add the following to Part 1, Article 1.1:

D. Section 01315: Public Information

Delete Article 1.14, paragraph E and replace with the following:

E. From the total value of work, the Department deducts and retains five percent until after the entire Contract has been completed in an acceptable manner, with the following exceptions:

Delete article 2.2 and replace with the following:

List information here

Delete article 3.3:

The following is the footer information for of supplemental specification.

Title
00000M - Page x of y

Date goes here

Appendix 4: Special Provisions

Formatting similar to both types of supplemental specifications except as follows:

Date goes here for special provisions

SPECIAL PROVISION

PROJECT #

SECTION 00000S or 00000M

TITLE HERE

Formatting from this point for special provisions is similar to a supplemental specification except for the footer. Refer to the NOTE in either Appendix 2 or 3, depending on the type of Special Provision (S or M) being formatted.

Title
00000M - Page x of y

or

Title
00000S - Page x of y